

Monitoring Action Number	Indicator	Monitoring Task	Justification	Uncertainty And Risk	Duration	Data Analysis	Trigger For Management Changes
MA-4	Tidal marsh, swamp, flats, refugia, habitat complexity, connectivity and conveyance, suspension and deposit feeders, insects, macrodetritus and habitat specific food availability, juvenile salmonids in peripheral habitats and habitat opportunity.	Repeat estuary habitat surveys being conducted by NMFS (Bottom and Gore, 2001 proposal).	Identify if there is a change to habitat due to deepening.	Tidal marsh and swamp habitat M, L+; flats habitat M, M-L+; suspension/deposit feeders M, M; deposit feeders M, M; suspension feeders M, M; insects H, M; macrodetritus H, L+; habitat-specific food availability M, M; feeding habitat opportunity L, L+	One time survey conducted 3 years after completion of the deepening.	Habitat mapping from aerial photos and ground surveys.	Changes to individual habitat types that are based on defined threshold values. Determine need for other surveys.

Description:

The following are the major objectives of the ongoing AFEP study. They are described in greater detail in the Bottom, D and K. Gore 2001, *Estuarine habitat and juvenile salmon – Current and historic linkages in the lower Columbia River and estuary* Final research Proposal to the Anadromous Fish Evaluation Program. Portland District, U.S. Army Corps of Engineers.

Objective 1. Compare trends in abundance and life histories of juvenile salmon at a landscape scale on representative transects of shallow-water habitat between Puget Island and the Columbia River mouth.

Objective 2: Describe salmonid use and performance in selected emergent and forested wetlands and their relationship to local habitat features.

Objective 3: Characterize historical changes in flow and sediment input to the Columbia River estuary and change in habitat availability throughout the lower river and estuary.

Schedule: The study has been ongoing with AFEP funds since 2001 and will continue until 2011 subject to the availability of AEFP funds. The CRCIP will fund this study in the third year after construction (2009, tentatively) to assess any changes in salmon habitat and use following construction.

Status: CRCIP will fund in the third year after construction.